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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,500	07/27/2006	Takaaki Noda	128807	6657

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EXAMINER	
STOUFFER, KELLY M	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
02/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,500	NODA ET AL.	
	Examiner	Art Unit	
	KELLY STOUFFER	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 1-16 in the reply filed on 30 November 2007 is acknowledged. The traversal is on the ground(s) that search and examination may be made without serious burden. This is not found persuasive because the two groups comprise different inventions with different classifications. The method of claims 1-16 does not necessarily have to be made by the apparatus of 17 and therefore their search areas would not overlap. Further, it is noted that this it was a lack of unity requirement made by the examiner on 1 November 2007 and therefore falls under PCT Rule 13.2 Section 2 and not the section of the MPEP cited by the applicant in the instant response.

The requirement is still deemed proper and is therefore made FINAL.

Claim 17 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 172 on page 13, line 20. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Claim Objections

Claims 1-16 are objected to because of the following informalities: The claims contain multiple grammar and spelling errors as a result of their translation from the priority document. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 13 are written in a manner which is extremely confusing, as the language is not coherent or grammatically correct. For example, claim 1 includes language in its last paragraph "wherein a pressure change quantity in the reaction furnace per unit time in the 2nd purge step has been made larger than a pressure change quantity in the reaction furnace per unit time in the 1st purge step" is deemed vague and confusing. Claim 13, for example, includes unloading a support then discharging a substrate then loading a support, but it is confusing as to how the support is discharged before the substrate if it is supporting the substrate. Examination of the claims was performed based upon the closest possible interpretation of the actual subject matter of the claims by the examiner. Claim 1 was interpreted to mean that a substrate is loaded into a processing furnace, or chamber, and a series of purges were performed while the substrate was in the chamber. After the substrate is removed a second purge is performed with the pressure of the second purge being greater than the pressure of the first purge. Claim 13 was interpreted to mean inserting a substrate on a support into a reaction furnace, processing the substrate, removing the substrate, and performing the purge step with the empty substrate support in the chamber. Claims 2-12 and 14-16 are rejected as being dependant upon a rejected base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2003/0232514 A1) in view of Hatano et al. (US 5963834).

As to claims 1-5, Kim et al. discloses manufacturing a semiconductor device comprising loading and processing a substrate in a reaction furnace or chamber with a series of inert gas purges, and unloading the substrate when the process is complete and repeated a sufficient number of times (abstract). Kim et al. does not disclose purging in between removing the substrate and substituting another. Hatano et al. teaches using an inert gas purge during a dry clean operation without the substrate in the chamber in order to purge the chamber of residue from the process (abstract). Therefore, it is obvious to one of ordinary skill in the art to include purging the chamber after the substrate is removed in Kim et al. as taught by Hatano et al. in order to remove residue from the chamber in between processing substrates. Though neither reference explicitly teaches the pressure requirements of claim 1, the purges in Kim et al. are used to purge unreacted material (abstract) and the purges of Hatano et al. are used to remove residue from the chamber in between substrate processings (abstract). Therefore, each of theses purging pressures, purging times, and amount of times the furnace is purged, and hence their relative values, may be modified by routine experimentation in order to achieve their desired results, absent evidence to show the criticality of the claimed values/relative ranges. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

As to claims 7-8, the process of Hatano et al. has removed the substrate from the substrate support during the purging operation (abstract). It is noted by the examiner

that using a dummy wafer in order to protect sensitive elements on the substrate holder during cleaning is a very common technique in the art.

As to claims 9-11, Kim et al. teaches a boron doped silicon film with the claimed precursors in paragraph 0026.

As to claim 12, Hatano et al. teaches the cleaning and purging process after the removal of every wafer in the abstract.

As to claims 13-16, Kim et al. in view of Hatano et al. teach the elements of these claims as discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY STOUFFER whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1792

kms

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792